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TECHNETIUM IN S SCULPTORIS

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Evidence is given for the presence of technetium in S Scl, a long-period Me variable.

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On 20–21 October 1972, ten days before the predicted maximum of S Sculptoris (an M3e–M8e star with magnitude ranging from 6 to 13 over a period of 366 days (Kukarkin et al. 1969)) a blue spectrogram (IIa–O emulsion; dispersion 9 Å mm^{-1}) of the variable star was taken with the 60-inch telescope of Cerro Tololo Inter-American Observatory. Two days later a red spectrogram (09802 emulsion) at 18 Å mm^{-1} was obtained. These spectrograms show strong emission in the hydrogen lines and at 3905 Å (Si I). Somewhat weaker emission is seen at 3852 Å (Fe I), 3954.5 Å (Al I), 4005 Å (Fe I), and 4233 Å (Fe II). There are many other weak emission features.

To search for the possible presence of technetium, the spectrum was traced on the microphotometer of the Lick Observatory from 4226 Å to Hγ. The identifications within that region were made with the aid of Merrill's (1948) list. Peery (1971) has given a detailed description of the region around each of the three features of Tc I, at 4238.19 Å, 4262.27 Å, and 4297.06 Å. Each of these three lines is present in S Scl, and the ratios of the line strengths agree with those in Peery's illustration. Because S Scl is not an S star, the difficulties described by Davis (1968) in making a definite identification of Tc I should not occur.

Evidence for the presence of ZrO is marginal. The bandhead at 6473 Å may be present on the 09802 spectrogram. However, it is much weaker than the adjacent bandhead of TiO at 6484 Å.

We conclude that Tc I is present in the spectrum of S Scl. This is not surprising, as the only two long-period variable Me stars previously examined for the possible presence of technetium by Peery (1971) both gave positive results.

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